

## ABSTRACT OF THE DISCLOSURE

A solution prepared by dissolving an organic metal compound in an organic solvent is sprayed from a pore nozzle into a pre-heating furnace of 50 to 600°C in a reaction furnace in a rare gas atmosphere of 500 Torr or less by pressurizing with an inert gas; a mixed gas of the organic metal compound and the organic solvent which are pre-heated and vaporized is fed into a main heating furnace which is adjacent to the above pre-heating furnace and heated to 550 to 1000°C in a rare gas atmosphere of 500 Torr or less; the organic metal compound is thermally decomposed to produce metal fine particles; the organic solvent is thermally decomposed with the above particles being used as a catalyst to produce carbon atoms; and a graphene sheet is grown in a growing part provided at a downstream side of the main heating furnace, whereby a single-walled carbon nanotube is prepared. Ferrocene and iron carbonyl can be used as the organic metal compound, and alcohols and ethers can be used as the organic solvent.